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SIERRA STORMS AND BIRDS

By F. S. HANFORD

AFTER the last of the heavy winter storms piles up great quantities of snow on the peaks and higher elevations of the Sierras, there comes a time when the sun shines for successive days and the iron grip of winter is lifted from the land. From now on bright and sunshiny weather is the rule, except for several light storms occurring in May and June, and the mid-summer thunder showers in July or August. The spring storms after April are comparatively short in duration, lasting but a day or so, but in the course of a few hours four or five inches of wet and heavy snow may fall. Alternate periods of rain and sunshine soon turn the snow to slush and it quickly vanishes, though not without considerable damage to nesting birds, especially those species that nest on the horizontal branches of conifers.

The summer thunder storms are severe above 8,000 feet elevation. While abundant showers of life-giving rain refresh the lower levels, hail and snow, varied with periods of drenching rain, combine to render life miserable to the traveler higher up. At Lake of the Woods; July 12, 1912, such a storm overtook us, lasting, with intermissions, for seven days. Great banks of cumulus clouds would mount into the clear sky over the southern horizon about noon, and in an hour we would be deluged with floods of rain, varied with half hour periods of hail, lasting sometimes far into the night. The hail stones which fell during these storms averaged from one half to one inch in diameter, and, plunging and ripping through the foliage of the trees, they would strike the ground with great force, rebounding several feet. After being struck on the head by several stones, I had no wish to have the performance repeated, and always sought shelter as soon as the bombardment began.

The destruction caused by severe hail storms to the nests and young of the mountain birds is at once apparent. Many species, finches, tanagers, Evening Grosbeaks and others, are found nesting until late in July in the Pyramid Peak region. Some of the late nests, perhaps, are the result of the earlier ones being destroyed by snow or jays; others contain second broods.

The few notes transcribed below were hastily written down during the storm and after, and may prove of interest. Although almost two months were spent in the high Sierras in 1912, bird study was a secondary consideration during the trip, and the nests examined were discovered by accident. Probably if a systematic search had been made, many more victims of the storm would have been found.

A mother Cassin Purple Finch continued to feed her young in a nest high up in a hemlock during a few hours of rain; at the first crashing downpour of the hail, the nestlings were silenced and the parent was seen no more.

Other nests were examined during the week of storm, and in almost every case they were found abandoned, the young dead, the nests battered and soggy. We were informed of a nest of the Western Evening Grosbeak containing young birds, on the opposite shore of the lake, but on visiting that locality a day afterward no traces of the birds could be found.

Of the destruction of the nests of ground building birds, a single illustration will be sufficient. A nest with eggs of the White-crowned Sparrow was found in a situation usual with this species, in the shelter of bushes and growing vegetation. In this instance the small, dense bush that sheltered the nest could have up-

held several inches of snow. The hail-stones, however, found their way between the branches and made short work of the eggs.

As an instance of ground building birds building in well sheltered spots, in the regions of storms, I will mention several nests of Thurber Junco. July 21 two nests of the Junco were discovered on small stone ledges, well underneath projecting blocks of granite on the terraced slope of Pyramid Peak, granite, utterly bare of soil, extending underfoot in all directions. What would seem to be a more congenial spot for the species was a low thicket of dwarfed pines, encircling a tiny alpine garden on the shore of a lake not far away. However, the nests and eggs under the rock roof were not harmed at all by the violent dashes of hail.

Earlier in the season, at Bijou on the southern shore of Lake Tahoe, I was surprised to find two nests of the Junco built inside of tin cans lying in a meadow. Eggs in one nest and young in the other were not injured by several inches of snow which fell at that time. Later I was informed that this method of nest building with Juncos was not uncommon in the vicinity of Bijou.

AN INTRODUCTION TO THE STUDY OF THE EGGS OF THE NORTH AMERICAN LIMICOLAE

By DR. R. W. SHUFELDT

WITH SIX PHOTOS

IT WOULD seem that up to the present time no contribution has appeared which has been devoted to descriptions of the eggs of the limicoline birds of this country, and certainly none that has been illustrated by reliable figures of the eggs of the principal genera composing this most interesting assemblage. There are, to be sure, various books extant, in which brief descriptions of these eggs are given, indeed, one or two such books with colored illustrations of them, but they do not belong to the class of literature to which reference is made. Major Bendire's magnificent volumes did not reach the shore and water birds, a fact that every ornithologist in this country has, at one time or another, mentioned with the most sincere regret. It may be said, too, in passing, now that Mr. A. C. Bent is doing such admirable work in the direction of completing that elegant classic it is to be hoped that he may be so fortunate as to command the means to bring out, as illustrations for it, plates of colored figures of eggs of all the water birds of North America, in a way that Bendire would have done, had he lived to accomplish it.

The collection of eggs of North American birds in the United States National Museum is truly of a magnificent character; it forms a part of the material under the care of the Division of Birds of that institution, where it is cased in the best class of modern cases, and arranged in such a manner as to be readily available for the oölogical student. There is also a most beautiful display of birds' eggs and nests in the halls of the ornithological exhibit in another part of the main building. Any responsible ornithologist of standing may study these eggs, but they have not been so used in the present contribution. This would have required far more time than I have at my command at present; moreover, the eggs of our limicoline birds are there in large series, consisting of hundreds of specimens; to have touched them at all would simply have meant for me to